

Worksheet: Reaction Rates

1. A study of reaction RATES is called chemical kinetics.

2. Reaction rate refers to how quickly or slowly the REACTANTS disappear and the PRODUCTS appear.

3. If a reaction is to occur, reacting particles must first COLLIDE.

4. What are the FOUR major factors that affect reaction rate?

• TEMP • SURFACE AREA • CONCENTRATION
• CATALYST

5. Why would a mixture of gases react faster when the volume they occupy is decreased?

THEY ARE CLOSER TOGETHER SO THEY'RE MORE LIKELY TO COLLIDE

6. Why would iron shavings rust faster than an iron nail?

SHAVINGS WOULD RUST FASTER DUE TO HIGHER SURFACE AREA

7. What is the effect of a catalyst on the required energy to achieve effective collisions?

LOWERS THE ACTIVATION ENERGY

8. Molds and bacteria that spoil food. Explain, using your knowledge of factors affecting the rate of reaction, why food doesn't spoil as fast when it is refrigerated as it would at room temperature.

↑ TEMP, ↑ RATE OF RXN, ↓ RXN TIME

9. Due to decomposition reactions with oxygen or carbon dioxide in the air, meat begins to feel slimy and smell spoiled. Explain, using your knowledge of chemical kinetics, why meat spoils less rapidly when left unsliced.

UNSliced MEAT HAS A LOWER SURFACE AREA... ↓ SA, ↓ RATE OF RXN, ↑ RXN TIME

10. Based on your knowledge of factors affecting the rate of reaction, why is there a danger of explosions in places such as silos and coal mines where there are large quantities of powdered, combustible materials? (watch youtube video on progressbook)

↑ SA ↑ RXN RATE ↓ RXN TIME